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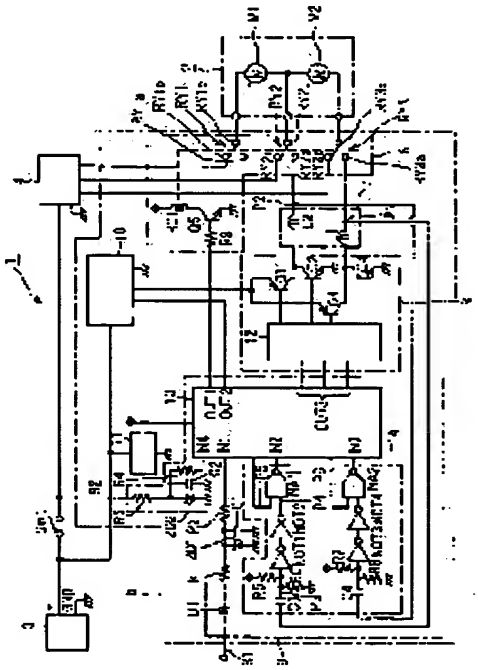
(54) ANGLE CONTROL DEVICE FOR MIRROR FOR VEHICLE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an angle control device for a mirror for a vehicle capable of preventing occurrence of shift of a mirror angle when the mirror angle is tilted interlocking with a reverse gear.

SOLUTION: When a vertical motor M2 is normally rotated to move the mirror angle to a set position, a count value of number of pulses of a high-frequency signal corresponding to a rotation amount beyond the set position due to inertia is stored as an excessive count value in an excessive count value storing portion 13c. When the vertical motor M2 is then reversely rotated to return the mirror to a normal position, the vertical motor M2 is reversely rotated so as to provide a count value derived by adding the excessive count value to a standard count value. Since the shift of the mirror angle is corrected with such an operation, the mirror angle does not shift to always provide a suitable angle even when the mirror angle control interlocking with a reverse signal is repeated a plurality of times.



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CLAIMS

[Claim(s)]

[Claim 1] By impressing supply voltage with manual operation to the motor for tilting which is characterized by providing the following and which consists of direct-current brush motors While rotate the motor for tilting concerned, and enabling adjustment of a mirror angle, and supply of an external signal being interlocked with, rotating the aforementioned motor for tilting normally and making a mirror tilt to a desired setting position The angle control unit of the mirror for vehicles controlled for the supply interruption of an external signal to be interlocked with, to reverse the aforementioned motor for tilting, and to return a mirror to a regular position. A means to detect the RF signal generated at the time of the brush change at the time of the aforementioned motor rotation for tilting, and to count the pulse number of this RF signal. In case the aforementioned motor for tilting is rotated normally or reversed and a mirror angle is made into a setting position or a regular position The puls number of the RF signal corresponding to rotation of the motor for tilting of the part which crossed a setting position or a regular position concerned by inertia is detected as excess counted value. In case the motor for tilting is reversed or rotated normally next time and a mirror angle is made into a regular position or a setting position, it is based on the excess counted value concerned, and it is an amendment means about angle of rotation at the time of an inversion or normal rotation.

[Claim 2] By impressing supply voltage with manual operation to the motor for tilting which is characterized by providing the following and which consists of direct-current brush motors While rotate the motor for tilting concerned, and enabling adjustment of a mirror angle, and supply of an external signal being interlocked with, rotating the aforementioned motor for tilting normally and making a mirror tilt to a desired setting position The angle control unit of the mirror for vehicles controlled for the supply interruption of an external signal to be interlocked with, to reverse the aforementioned motor for tilting, and to return a mirror to a regular position. A RF signal-detection means to detect the RF signal generated at the time of the brush change at the time of the aforementioned motor rotation for tilting. A pulse-number count means to count the RF signal detected with the aforementioned RF signal-detection means. A criteria counted value setting means to set up the counted value of the pulse number of the aforementioned RF signal at the time of rotating normally or reversing the aforementioned motor for tilting, and moving a mirror angle to a setting position or a regular position as criteria counted value. In case the aforementioned motor for tilting is rotated normally or reversed and a mirror angle is made into a setting position or a regular position An excess counted value storage means to memorize the pulse number of the RF signal corresponding to rotation of the motor for tilting of the part which crossed a setting position or a regular position concerned by inertia as excess counted value, In case the motor for tilting is reversed or rotated normally next time and a mirror angle is made into a regular position or a setting position The drive control means which output a drive control signal that the aforementioned motor for tilting should be normally reversed or rotated so that the pulse number of the RF signal generated at the time of an inversion or normal rotation may turn into a pulse number which added the aforementioned excess counted value to the aforementioned criteria counted value, A motorised means for it to be based on the aforementioned drive control signal, and to rotate normally or reverse the aforementioned motor for tilting.

[Claim 3] It is the angle control unit of the mirror for vehicles according to claim 2 carry out outputting a control signal that the aforementioned motor for tilting should be reversed and a mirror angle should be moved to a regular position as the feature when the ignition of the vehicles concerned is interlocked with, and it turns on, it has the ignition switch which carries out OFF operation, the aforementioned drive control means have the aforementioned mirror angle in a setting position and it comes in the aforementioned ignition switch to be turned off.

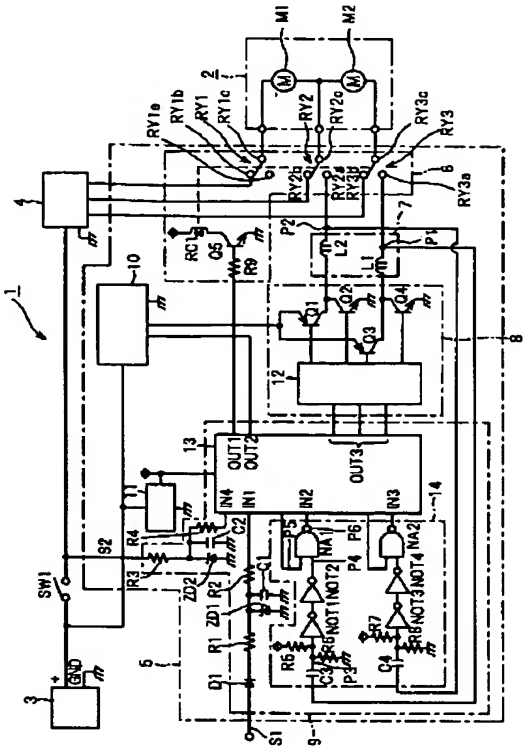
[Claim 4] The angle control unit of the mirror for vehicles given in either the claim 2 characterized by providing the regulated-power-supply circuit for motors which stabilizes the voltage signal supplied to the aforementioned motorised means, or the claim 3.

[Claim 5] The angle control unit of the mirror for vehicles according to claim 4 which sets the aforementioned regulated-power-supply circuit for motors to ON when the aforementioned ignition switch is ON, and is characterized by providing the power control means which makes off the aforementioned regulated-power-

supply circuit for motors when the aforementioned ignition switch is OFF.
[Claim 6] Shape in waveform the RF signal detected with the aforementioned RF signal-detection means, and a waveform-shaping means to generate the square wave of the bundle ball corresponding to one brush change is provided. It has a square wave generation means to generate the square wave which serves as fixed time ON synchronizing with the timing of generating of the square wave of the aforementioned bundle ball. and the aforementioned pulse-number count means The angle control unit of the mirror for vehicles given in any 1 term of the claim 2 characterized by counting the pulse number of the output signal of the aforementioned waveform-shaping means, the output signal of the aforementioned square wave generation means, and the pulse signal obtained based on the logical operation of ** - a claim 5.
[Claim 7] The angle control unit of the mirror for vehicles according to claim 6 characterized by providing or including the following. A speed-detection means to detect the rotational speed of the aforementioned motor for tilting based on the generating timing of the RF signal generated within fixed time from the rotation start of the aforementioned motor for tilting. And an ON time-control means to control the ON time of the square wave generated with the aforementioned square wave generation means according to the rotational speed detected with this speed-detection means.
[Claim 8] The aforementioned ON time-control means is the angle control unit of the mirror for vehicles according to claim 7 characterized by detecting the rotational speed of the aforementioned motor for tilting based on the rotational speed detected with the aforementioned speed-detection means within fixed time after carrying out predetermined-time progress from the rotation start of a motor.

[Translation done.]

Drawing selection [Representative drawing]



[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the angle control unit of the mirror for vehicles which controls the degree of tilt angle of mirrors for vehicles, such as a door mirror and a side-view mirror, by remote control operation.
[0002]
[Description of the Prior Art] Generally, in order that vehicles, such as a passenger car, a wagon vehicle, and a truck, may check back safety, reflector glasses, such as a door mirror and a side-view mirror, are carried. At such a reflector glass, the actuator for angle regulation by remote control is provided, and an operator can set a mirror-plane angle as a suitable position by carrying out remote control operation by the driver's seat so that a mirror-plane angle can be set as the position suitable for the operator.
[0003] Moreover, in case [, such as the time of vehicle warehousing] vehicles are retreated, as for an operator, it is desirable to put near the rear wheel section of vehicles into a field of view. However, in the above-mentioned actuator for angle regulation, since it is necessary to operate it similarly when an operator needs to push and operate the button for mirror angle adjustment each time and it returns to the original angle in order to make a mirror-plane angle incline downward and to put near the rear wheel into the visual field range, there is a fault that convenience is bad.
[0004] Then, conventionally, it detects having put the shift lever of vehicles into the reverse gear, and the mirror equipment constituted so that a mirror angle might be automatically changed to a desired tilting position is proposed, and practical use is presented as indicated by for example, JP,4-95846,U CD-ROM (henceforth the conventional example 1).
[0005] In this conventional example 1, when having put the automatic formula shift lever into the reverse gear was detected, make down carry out the specified quantity inclination of the degree of tilt angle of a reflector glass automatically, it is made to go into a visual field near the rear wheel section of vehicles by this detecting signal and a reverse gear is canceled, the content which can be returned to the original angle is indicated. Furthermore, when the reverse gear of a shift lever is passed and the injection to a reverse gear is detected in instant (for example, when switching to a drive from parking), the delay timer circuit is provided so that a mirror angle may not tilt downward in response to this. And according to such composition, since a mirror angle tilts automatically, at the time of vehicles retreat, an operator does not have troublesome operation, and there is an advantage that operability improves in it.
[0006] However, with such composition, if tilting operation of the mirror interlocked with the reverse gear is repeated two or more times, the problem that a mirror position shifts gradually will occur. Hereafter, this is explained in detail. In addition, the case where the case where it is in a "regular position" and the position where a mirror projects near the rear wheel of vehicles about the case where a mirror is in the usual back check-by-looking position below is called "setting position", and the motor for tilting is rotated from a regular position to a setting position will be called "normal rotation", and this contrary will be called "inversion."
[0007] If put into a shift lever by the reverse gear, in response to this signal, it will rotate normally and a mirror will move to a setting position from a regular position. At this time, in fact, a mirror does not necessarily stop correctly in a setting position, and after stopping voltage supply on the motor for tilting, this motor for tilting rotates a little by inertia, and a mirror is tilted a little. On the other hand, a reverse gear reverses release **** and a mirror from a setting position to a regular position in this position. Under the present circumstances, after a mirror's necessarily not stopping correctly in a regular position and stopping supply of the voltage to the motor for tilting like the time of normal rotation, this motor for tilting rotates a little by inertia, and a mirror is tilted a little.
[0008] And since the rotation by inertia is different in many cases in the time of normal rotation and an inversion, if normal rotation and an inversion are repeated two or more times, the error by difference of the rotation by inertia will be accumulated, and the problem that the degree of tilt angle of a mirror will shift gradually will generate it.

[0009] In another side, in case it is alike vehicles on stream and invades into a highway, to make large the visual field range of the right-hand side side for a safety check is desired. However, it is not easy to adjust the above-mentioned actuator for angle regulation, and to change the visual field range of a mirror plane at the time of highway invasion, conventionally, a signal when the switch of a blinker is set to ON is detected, and the thing which makes the mirror-plane angle of a reflector glass incline in a longitudinal direction automatically is known as indicated by for example, the JP,58-29540,U microfilm (henceforth the conventional example 2). However, like the conventional example 1 which was described above in the case of this conventional example 2, if normal rotation of the motor for tilting and an inversion are repeated two or more times, the problem that the degree of tilt angle of a mirror will shift gradually will occur.

[0010]

[Problem(s) to be Solved by the Invention] Although the thing to which a reverse gear is interlocked with and a mirror angle is made to tilt downward (back wheel check-by-looking position), and the thing which operates so that a blinker may be interlocked with and a mirror angle may be made to tilt to a longitudinal direction are proposed in the control unit of the mirror angle in the former as described above In the control unit of such a conventional mirror angle, when operation of having made it a reverse gear or a blinker interlocked with, and making a mirror angle tilting was repeated two or more times, there was a fault that a mirror angle will shift gradually.

[0011] the case where the place which it is made in order that this invention may solve such a conventional technical problem, and is made into the purpose was interlocked with external signals, such as a reverse gear or a blinker, and a mirror angle is made to tilt -- setting -- a gap of a mirror angle -- an amendment -- it is in offering the angle control unit of the mirror for vehicles which can do things

[0012]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention of a publication to this application claim 1 By impressing supply voltage with manual operation to the motor for tilting which consists of direct-current brush motors While rotate the motor for tilting concerned, and enabling adjustment of a mirror angle, and supply of an external signal being interlocked with, rotating the aforementioned motor for tilting normally and making a mirror tilt to a desired setting position In the angle control unit of the mirror for vehicles controlled for the supply interruption of an external signal to be interlocked with, to reverse the aforementioned motor for tilting, and to return a mirror to a regular position A means to detect the RF signal generated at the time of the brush change at the time of the aforementioned motor rotation for tilting, and to count the pulse number of this RF signal, In case the aforementioned motor for tilting is rotated normally or reversed and a mirror angle is made into a setting position or a regular position The pulse number of the RF signal corresponding to rotation of the motor for tilting of the part which crossed a setting position or a regular position concerned by inertia is detected as excess counted value. In case the motor for tilting is reversed or rotated normally next time and a mirror angle is made into a regular position or a setting position, it is the feature to have provided the amendment means for angle of rotation at the time of an inversion or normal rotation based on the excess counted value concerned.

[0013] Invention according to claim 2 moreover, by impressing supply voltage with manual operation to the motor for tilting which consists of direct-current brush motors While rotate the motor for tilting concerned, and enabling adjustment of a mirror angle, and supply of an external signal being interlocked with, rotating the aforementioned motor for tilting normally and making a mirror tilt to a desired setting position In the angle control unit of the mirror for vehicles controlled for the supply interruption of an external signal to be interlocked with, to reverse the aforementioned motor for tilting, and to return a mirror to a regular position A RF signal-detection means to detect the RF signal generated at the time of the brush change at the time of the aforementioned motor rotation for tilting, A pulse-number count means to count the RF signal detected with the aforementioned RF signal-detection means, A criteria counted value setting means to set up the counted value of the pulse number of the aforementioned RF signal at the time of rotating normally or reversing the aforementioned motor for tilting, and moving a mirror angle to a setting position or a regular position as criteria counted value, In case the aforementioned motor for tilting is rotated normally or reversed and a mirror angle is made into a setting position or a regular position An excess counted value storage means to memorize the pulse number of the RF signal corresponding to rotation of the motor for tilting of the part which crossed a setting position or a regular position concerned by inertia as excess counted value, In case the motor for tilting is reversed or rotated normally next time and a mirror angle is made into a regular position or a setting position The drive control means which output a drive control signal that the aforementioned motor for tilting should be normally reversed or rotated so that the pulse number of the RF signal generated at the time of an inversion or normal rotation may turn into a pulse number which added the aforementioned excess counted value to the aforementioned criteria counted value, It is characterized by having been based on the aforementioned drive control signal and providing a motorised means to rotate normally or reverse the aforementioned motor for tilting.

[0014] Invention according to claim 3 is interlocked with the ignition of the vehicles concerned, and it turns on, has the ignition switch which carries out OFF operation, and carries out that the aforementioned drive control means output a control signal that the aforementioned motor for tilting should be reversed and a mirror angle should be moved to a regular position when the aforementioned mirror angle is to a setting position and it comes in the aforementioned ignition switch to be turned off as the feature.
[0015] Invention according to claim 4 is characterized by providing the regulated-power-supply circuit for motors which stabilizes the voltage signal supplied to the aforementioned motorised means. Invention according to claim 5 sets the aforementioned regulated-power-supply circuit for motors to ON, when the aforementioned ignition switch is ON, and when the aforementioned ignition switch is OFF, it is characterized by providing the power control means which makes off the aforementioned regulated-power-supply circuit for motors.
[0016] Invention according to claim 6 shapes in waveform the RF signal detected with the aforementioned RF signal-detection means. A waveform-shaping means to generate the square wave of the bundle ball corresponding to one brush change is provided. It has a square wave generation means to generate the square wave which serves as fixed time ON synchronizing with the timing of generating of the square wave of the aforementioned bundle ball. and the aforementioned pulse-number count means It is characterized by counting the pulse number of the output signal of the aforementioned waveform-shaping means, the output signal of the aforementioned square wave generation means, and the pulse signal obtained based on the logical operation of **.
[0017] It carries out that invention according to claim 7 possessed an ON time-control means control the ON time of the square wave generated with the aforementioned square wave generation means according to the rotational speed which has a speed-detection means detect the rotational speed of the aforementioned motor for tilting based on the generating timing of the RF signal generated within fixed time from the rotation start of the aforementioned motor for tilting, and was detected with this speed-detection means as the feature.
[0018] It is characterized by the aforementioned ON time-control means detecting the rotational speed of the aforementioned motor for tilting based on the rotational speed detected with the aforementioned speed-det ction means within fixed time after carrying out predetermined-time progress from the rotation start of a motor in invention according to claim 8.
[0019] In case according to this invention constituted like **** the motor for tilting is rotated normally and a mirror angle is moved to a setting position, the counted value of the pulse number of the RF signal corresponding to the part which rotated across this setting position by inertia is memorized as excess counted value. And in case the motor for tilting is reversed next time and a mirror is returned to a regular position, the motor for tilting is reversed so that it may become the counted value which added excess counted value to the criteria counted value set up beforehand.
[0020] And in case the counted value of the pulse number of the RF signal corresponding to the part which rotated across this regular position by inertia when reversing the motor for tilting and returning to a regular position similarly is memorized as excess counted value, the motor for tilting is rotated normally next time and a mirror angle is made into a setting position, this excess counted value is added to criteria counted value, and the motor for tilting is rotated normally.
[0021] Since the gap of a mirror angle was amended each time, even when the mirror angle control interlocked with the external signal is repeated two or more times according to such operation, a mirror angle does not shift and it can consider as an always suitable angle.
[0022]
[Embodiments of the Invention] Hereafter, the operation form of this invention is explained based on a drawing. The block diagram showing the composition of the mirror angle control unit 1 and reflector glass 2 which drawing 1 requires for 1 operation form of this invention, and drawing 2 are the circuit diagrams showing the concrete composition. As shown in this drawing, this mirror angle control unit 1 controls by manual operation in reversible rotation of the motor M1 for right and left carried in a reflector glass 2 and the motor M2 for the upper and lower sides, and adjusts it to the angle of a request of the degree of tilt angle of a reflector glass 2.
[0023] furthermore, when the reverse signal (external signal) outputted when the shift lever of vehicles is supplied to a reverse gear (backward gear) is given Rotate the motor M2 for the vertical directions normally, and a mirror is made to tilt to a desired setting position automatically. When it enables it to check by looking near the wheel of vehicles back and a reverse signal is canceled, the motor M2 for the upper and lower sides is reversed, and it operates so that a mirror may be returned to the original position (regular position). In addition, below, although a reverse signal is explained to an example as an external signal, this invention is not limited to this.
[0024] As shown in drawing 1 , this mirror angle control unit 1 The battery 3 as DC power supply, and the mirror switch 4 for making it rotate so that the voltage from a battery 3 may be supplied to the motor M1 for right and left, and the motor M2 for the upper and lower sides with manual operation and a mirror may serve as a desired angle, Usually, while sometimes carrying out the rotation drive of the motor M1 for right and left, and the motor

M2 for the upper and lower sides by operation by the mirror switch 4, when the reverse signal S1 is given, it has a gang control means 5 to be interlocked with the reverse signal S1 concerned, and to control rotation of the motor M2 for the upper and lower sides. The motor M1 for right and left and the motor M2 for the upper and lower sides consist of direct-current brush motors, respectively.

[0025] The change section 6 to which the gang control means 5 switches a manual operation and interlocking operation, The detecting element (RF signal-detection means) 7 which detects the RF signal generated at the time of the brush change at the time of the motor M2 rotation for the upper and lower sides, and by supplying voltage possible [a change of polarity] to the motor M2 for the upper and lower sides The motorised circuit 8 which controls normal rotation of this motor M2 for the upper and lower sides, and an inversion (motorised means), The control circuit 9 which controls the rotational frequency of the motor M2 for the upper and lower sides according to the pulse number of the RF signal detected by the detecting element 7, The regulated-power-supply circuit 10 for motors which stabilizes the voltage supplied to the motorised circuit 8, and the regulated-power-supply circuit 11 for circuits which stabilizes the voltage supplied to a control circuit 9 are provided.

[0026] Moreover, between the mirror switch 4 and the battery 3, the ignition of vehicles is interlocked with, it turns on, the ignition switch SW1 which carries out OFF operation is installed, and ON of this ignition switch SW1 and the OFF detection signal S2 are supplied to a control circuit 9.

[0027] As shown in drawing 2 , the motorised circuit 8 consists of a transistor control section 12 and four transistors Q1-Q4, among these transistors Q1 and Q3 are used as a PNP type, and let transistors Q2 and Q4 be NPN types. And the transistor control section 12 is controlled to make it flow through transistors Q2 and Q3, in case it is made to flow through transistors Q1 and Q4 in case the motor M2 for the upper and lower sides is rotated normally, and it is made to reverse.

[0028] The change section 6 consists of three relay contact RY1-RY3 interlocked with the transistor Q5 for switching, resistance R9, the relay coil RC1, and this relay coil RC1. Terminal RY1b of each relay contact RY1-RY3, RY2b, and RY3b are connected with the mirror switch 4, respectively, terminal RY1c is connected to the end of th motor M1 for right and left, terminal RY2c is connected to the other end of the motor M1 for right and left, and the end of the motor M2 for the upper and lower sides, and terminal RY3c is further connected to the other end of the motor M2 for the upper and lower sides. Moreover, terminal RY2a and terminal RY3a are connected to the detecting element 7.

[0029] The detecting element 7 possesses two pick up coils L1 and L2 for taking out the component of the RF signal included in the current which flows on the motor M2 for the upper and lower sides, the end of each pick up coils L1 and L2 is connected to the change section 6 and a control circuit 9, and the other end is connected to the motorised circuit 8. That is, the end P1 of a pick up coil L1 is connected to terminal RY3a of relay contact RY3, and the end P2 of a pick up coil L2 is connected to terminal RY2a of relay contact RY2. Furthermore, points P1 and P2 are connected to the control circuit 9.

[0030] The control circuit 9 consists of the main-control section 13, the waveform-shaping section 14, and various kinds of circuit elements. The waveform-shaping section 14 generates the square wave for counting the number of the RF signals detected by pick up coils L1 and L2, and has the capacitor C3 for an alternating current path, inverter circuits NOT1 and NOT2, a series-connection circuit with NAND circuit NA1, the capacitor C4 for an alternating current path, inverter circuits NOT3 and NOT4, and the series-connection circuit of NAND circuit NA2.

[0031] And the input side of the capacitor C3 for an alternating current path is connected with the end P1 of a pick up coil L1, and the output side of NAND circuit NA1 is connected to the input terminal IN2 of the main-control section 13. Moreover, the input side of the capacitor C4 for an alternating current path is connected with the end P2 of a pick up coil L2, and the output side of NAND circuit NA2 is connected to the input terminal IN3 of the main-control section 13. Furthermore, the square wave signal (after-mentioned) outputted from the main-control section 13 is supplied to one input terminal of two NAND circuits NA1 and NA2.

[0032] Moreover, the node of the capacitor C3 for an alternating current path and inverter circuit NOT1 is connected to the ground potential through resistance R6 while connecting with power supply potential through resistance R5. Similarly, the node of the capacitor C4 for an alternating current path and inverter circuit NOT3 is connected to the ground potential through resistance R8 while connecting with power supply potential through resistance R7.

[0033] The main-control section 13 has input terminals IN1-IN4 and output terminals OUT1-OUT3, and the reverse signal S1 is supplied to an input terminal IN1 through diode D1, resistance R1, zener diode ZD1, a capacitor C1, and resistance R2. Moreover, the detection signal S2 of ignition is supplied to an input terminal IN4 through resistance R3, zener diode ZD2, a capacitor C2, and resistance R4.

[0034] An output terminal OUT1 is connected to the base of a transistor Q5 through resistance R9, an output terminal OUT2 is connected to the regulated-power-supply circuit 10 for motors, and the output terminal OUT3 is connected to the transistor control section 12.

[0035] Drawing 3 is the block diagram showing the internal configuration of the main-control section 13. like illustration, the main-control section 13, when rotating the motor M2 for the upper and lower sides normally and considering as a setting position from a regular position Criteria counted value setting section 13a which sets up beforehand the pulse number of the RF signal generated when making it reverse and considering as a regular position from a setting position as criteria counted value, Pulse-number count-area 13b which counts the pulse number at the time of an inversion based on the pulse signal given from the waveform-shaping section 14 at the time of the motor M2 normal rotation for the upper and lower sides, After the motor M2 for the upper and lower sides arrives at a halt position (it is a regular position in a setting position and an inversion when it is normal rotation), excess counted value storage section 13c which memorizes the pulse number of the RF signal when rotating by inertia as excess counted value is provided.
[0036] moreover, when the regulated-power-supply circuit 10 for motors is set to ON when the detecting signal S2 of ignition is given, and supply of a detecting signal S2 stops When a reverse signal (external signal) is given with 13d of power control sections which perform control which makes off this regulated-power-supply circuit 10 for motors, while outputting the signal for a drive to the base of a transistor Q5 After supply of a reverse signal stops and a mirror angle returns to a regular position, it has relay-control section 13e controlled to stop the output of this signal for a drive, and 13f of motorised control sections which output the signal for motorised to the transistor control section 12.
[0037] Furthermore, based on the pulse signal given from a waveform shaping circuit 14, it has ON time-control section 13i which changes the ON time of the square wave outputted from 13h of square wave generation sections according to the speed detected by 13g of rotational-speed detecting elements which detect the rotational speed of the motor M2 for the upper and lower sides, and 13h of square wave generation sections which generate the square wave signal for supplying the input terminal of NAND circuits NA1 and NA2 and 13g of rotational-speed detecting elements.
[0038] Drawing 4 is explanatory drawing showing the composition of the direct-current brush motor 21 of three poles used as the motor M1 for right and left, and a motor M2 for the upper and lower sides, and as shown in this drawing, this direct-current brush motor 21 has brush 21a in the center section. Therefore, with rotation of a motor, a brush will be switched 6 times by motor 1 rotation, and, thereby, 6 times per motor 1 rotation of RF signals occur. In addition, it is not limited to the direct-current brush motor of three poles, and this invention can also use the brush motor of other poles.
[0039] Next, it explains, referring to the flow chart which shows operation of this operation form constituted as mentioned above to drawing 5 . First, an operator sets the pulse number of the RF signal which will be generated by the time a mirror angle arrives at a setting position from a regular position as criteria counted value as initial setting as criteria counted value setting section 13a shown in drawing 3 . Namely, the rotational frequency of the motor M2 for the upper and lower sides until a mirror angle arrives at a setting position from a regular position is computed beforehand, and it is set as criteria counted value setting section 13a by making the pulse count value (in the case [3 very] of a motor per motor 1 rotation six pulses) corresponding to this into criteria counted value.
[0040] If the ignition of vehicles is turned on, the ignition switch SW1 will flow and the supply voltage from a battery 3 will be supplied to the mirror switch 4. Since the relay coil RC1 of the change section 6 is not excited at this time, each relay contact RY1-RY3 is connected to the terminal RY1 b-RY3b side, respectively.
[0041] Therefore, voltage can be impressed in reversible and it can be made to rotate normally and reverse by operating the mirror switch 4 to the motor M1 for right and left, and the motor M2 for the upper and lower sides. That is, the degree of tilt angle of a mirror can be set up arbitrarily.
[0042] Here, if an operator puts a shift lever into a reverse gear (backward gear), this will be interlocked with and the reverse signal S1 will be given (being the step ST 1 of drawing 5 YES). This reverse signal S1 is stabilized by zener diode ZD1 and the capacitor C1, and is supplied to the input terminal IN1 of the main-control section 13.
[0043] Relay-control section 13e shown in drawing 3 outputs the signal for a drive to the base of a transistor Q5 in response to supply of the reverse signal S1. Thereby, since between the collector of this transistor Q5 and an emitter flows, the relay coil RC1 is excited and connection of each relay contact RY1-RY3 is switched. That is, it connects with the terminal RY1 a-RY3a side.
[0044] Subsequently, pulse-number count-area 13b reads the criteria counted value set as criteria counted value setting section 13a (step ST 2), and 13f of motorised control sections outputs a motorised control signal to the transistor control section 12. In response by the transistor control section 12, the signal for a drive is outputted to the base of transistors Q1 and Q4. Thereby, since transistors Q1 and Q4 are made into switch-on, the voltage outputted from the regulated-power-supply circuit 10 for motors is impressed to the forward direction to the motor M2 for the upper and lower sides. That is, current will flow through the path of the regulated-power-supply circuit 10 for motors, a transistor Q1, a pick up coil L2, relay contact RY2, the motor M2 for the upper and lower sides, relay contact RY3, a pick up coil L1, a transistor Q4, and grand **. Therefore, since current flows on the motor M2 for the upper and lower sides at the forward direction, this motor M2 for

the upper and lower sides rotates normally, and a mirror is moved to a setting position (position whose check by looking near the vehicles rear wheel section is enabled) from a regular position (position which usually checks back by looking at the time of operation) (step ST 3).

[0045] When the motor M2 for the upper and lower sides carries out a rotation drive, a RF signal occurs at the time of the brush change accompanying rotation of the motor M2 for the upper and lower sides concerned, and the current to which this RF signal flows on the motor M2 for the upper and lower sides is overlapped. And it is detected by the pick up coil L1, a dc component is removed by the alternating current path capacitor C3, and this RF signal is further superimposed on a dc component according to the division ratio of resistance R5 and R6. this shows the signal wave form of the outputting point (point P3) of the capacitor C3 for an alternating current path to drawing 6 (a) -- as -- abbreviation -- it becomes the wave which a RF signal generates in a fixed time interval

[0046] Subsequently, this signal wave form (signal wave form of a point P3) is shaped in waveform by passing two inverter circuits NOT1 and NOT2, and the signal wave form of a point P4 becomes square wave-like, as shown in drawing 6 (b). Moreover, in 13h of square wave generation sections shown in drawing 3 , the signal which always serves as "H" level is outputted, and this signal (signal of point P5) is supplied to NAND circuit NA1. Therefore, the output signal (point P6) of this NAND circuit NA1 is switched to "H" level from "L" level, when the signal wave form of a point P4 switches from "H" level to "L" level.

[0047] And in 13h of square wave generation sections, when the signal of a point P6 is set to "H" level, it operates so that only a predetermined time t1 may output an ON signal ("L" level signal) from from. Therefore, the signal wave form in point P5 serves as a square wave which changes so that only time t1 may be turned on ("L" level), whenever the RF signal at the time of a brush change occurs, as shown in drawing 6 (c). Thereby, the output signal (point P6) of NAND circuit NA1 turns into a square wave signal with which 1 time of a pulse starts whenever a RF pulse signal occurs, as shown in drawing 6 (d).

[0048] In pulse-number count-area 13b shown in drawing 3 , this pulse number (pulse number generated at a point P6) is counted. With the time of becoming the criteria counted value by which this counted value is set as criteria counted value setting section 13a (in fact, although it is the value which added the last excess counted value to criteria counted value) Here, the control signal which should make 13f of motorised control sections which omit the explanation stop rotation of the motor M2 for the upper and lower sides is outputted (being a step ST 4 YES, Step (ST) 5). Thereby, since the transistor control section 12 suspends the signal output which makes transistors Q1 and Q4 drive, the motor M2 for the upper and lower sides stops, and a mirror angle serves as a setting position.

[0049] At this time, the motor M2 for the upper and lower sides does not necessarily stop exactly in the place where the counted value of a pulse number turned into criteria counted value, and in fact, by inertia, after it stops supply of voltage, it carries out angle rotation a little. And in excess counted value storage section 13c shown in drawing 3 , the value counted exceeding criteria counted value is memorized as excess counted value (step ST 6).

[0050] Subsequently, if an operator moves a shift lever to other positions (for example, drive gear) from a reverse gear, supply of the reverse signal S1 will be stopped (being a step ST 7 YES). Then, the transistor control section 12 will supply the signal for a drive to the base of transistors Q2 and Q3, and the transistors Q2 and Q3 concerned will be in switch-on. Therefore, the voltage outputted from the regulated-power-supply circuit 10 for motors will be impressed to an opposite direction to the motor M2 for the upper and lower sides through transistors Q3 and Q2. That is, current will flow in order of the regulated-power-supply circuit 10 for motors, a transistor Q3, a pick up coil L1, relay contact RY3, the motor M2 for the upper and lower sides, relay contact RY2, the coil L2 for pickup, a transistor Q2, and grand **, and the motor M2 for the upper and lower sides starts an inversion (step ST 8). In addition, when the ignition switch SW1 turns off, and supply of a reverse gear stops, the motor M2 for the upper and lower sides starts an inversion similarly.

[0051] Since the RF signal generated with rotation (inversion) of the motor M2 for the upper and lower sides is detected by the pick up coil L2 and shaped in waveform by the waveform shaping circuit 14 like the time of normal rotation, by pulse-number count-area 13b shown in drawing 3 , the pulse number of a RF signal counts it. And 13f of motorised control sections outputs the control signal which should reverse the motor M2 for the upper and lower sides to excess counted value storage section 13c until it adds this excess counted value and the criteria counted value set as criteria counted value setting section 13a and becomes this aggregate value, since the excess counted value when rotating normally last time is memorized (step ST 9).

[0052] And the control signal which should, by the way (it is YES at a step ST 9), stop rotation (inversion) of the motor M2 for the upper and lower sides as counted value reached the aggregate value of criteria counted value and excess counted value is outputted. Thereby, supply of the signal for a drive at the base of transistors Q2 and Q3 is stopped, and rotation of the motor M2 for the upper and lower sides is stopped (step ST 10). Moreover, it memorizes to excess counted value storage section 13c by making into new excess counted value counted value of the part which rotated by inertia in this case (step ST 11). In case this excess counted value

rotates the motor M2 for the upper and lower sides normally next time, it is added to criteria counted value.
[0053] Drawing 11 is explanatory drawing showing typically the relation between a mirror angle and the rotational frequency of the motor M2 for the upper and lower sides, and explains more rotation operation of the motor M2 for the upper and lower sides to a detail based on this drawing. In this drawing, as for a normal rotation and above arrow, a down arrow shows an inversion, and, in criteria counted value, p1 and p2, and .., the excess counted value at the time of normal rotation, q1 and q2, and .. show [r] the excess counted value at the time of an inversion.
[0054] First, in the 1st operation, if the motor M2 for the upper and lower sides which makes the mirror the regular position is normally rotated until it is set to criteria counted value r, a mirror arrives at a setting position, and only the excess counted value p1 will rotate by inertia further, and it will stop. And in reversing the motor M2 for the upper and lower sides from this halt position and returning to a regular position, it reverses the motor M2 for the upper and lower sides until it becomes the counted value (r+p1) adding criteria counted value r and the excess counted value p1. Consequently, a mirror arrives at a regular position, and only the excess counted value q1 rotates by inertia further, and it stops.
[0055] Subsequently, in the 2nd operation, the motor M2 for the upper and lower sides is normally rotated until it becomes the counted value (r+q1) adding criteria counted value r and the excess counted value q1. And if rotation operation of the motor M2 for the upper and lower sides is controlled by such procedure, even if it repeats operation of normal rotation and an inversion two or more times, the position gap by inertia rotation will not accumulate and it will shift a rotated part by 1 time of inertia. Since a gap of this one batch is very small, it does not pose a big problem for an operator.
[0056] In this way, since it is made to rotate until it becomes the counted value adding the excess counted value when rotating criteria counted value normally last time, in case it is made to rotate until it becomes the counted value adding the excess counted value when reversing criteria counted value last time, in case the motor M2 for the upper and lower sides is rotated normally, and the motor M2 for the upper and lower sides is reversed, the gap of a mirror angle can be prevented.
[0057] Moreover, the voltage supplied from the battery 3 of vehicles is sharply changed according to circumference environment or an operation situation. For example, the voltage value is low and a voltage value becomes high immediately after high-speed operation on the contrary the low early morning of atmospheric temperature. And if the supply voltage to the motor M2 for the upper and lower sides becomes small, rotational speed will fall, and as the RF signal detected by the pick up coil L1 (or L2) is shown in drawing 7 (a), the time zone Td which has generated the signal will become long. And if this time zone Td becomes longer than the ON time (time to be set to "L" level) t1 of the square wave signal outputted from 13h of square wave generation sections shown in drawing 3 , as shown in "A" of drawing 7 (c) In spite of being 1 time of a RF signal, the ON signal of two batches will be outputted, and as shown in this drawing (d), thereby, the pulse number generated at a point P6 will increase more than the pulse number of an actual RF signal. For this reason, the count of th pulse number of an exact RF signal will become impossible.
[0058] With this operation form, even when the output voltage of a battery 3 is changed by carrying the regulated-power-supply circuit 10 for motors, generating of the count error which enables it to supply the always stabilized voltage to the motor M2 for the upper and lower sides, and originates in voltage variation is prevented.
[0059] Moreover, in fact, it originates not only in voltage variation but in ambient temperature, and the rotational speed of the motor M2 for the upper and lower sides changes. That is, when ambient temperature is low, rotational speed is slow, and even if the voltage value supplied even if is the same, when ambient temperature is high, rotational speed becomes quick on the contrary. Therefore, when rotational speed is slow, a count error as shown in "A" of drawing 7 (c) may occur. In order to solve this problem, how to set up beforehand the ON time of the square wave signal outputted from 13h of square wave signal generation sections for a long time can be considered.
[0060] Namely, as shown in drawing 8 (c), it does not generate but the problem of counting twice the ON time of the square wave signal outputted from 13h of square wave signal generation sections to 1 time of a RF signal, even if t2 (t2> t1), then the time zone when a RF signal occurs become long can count the pulse number of a RF signal with a sufficient precision. However, although 2 times of RF signals occurred in fact as shown in "B" of this drawing (c) when the RF signal occurred at the short interval as the rotational speed of the motor M2 for the upper and lower sides became quick and it was shown in drawing 9 (a), this will be counted as 1 time and a count error will occur. That is, it is more convenient to set to t1 ON time of the square wave outputted from 13h of square wave signal generation sections, when the rotational speed of the motor M2 for the upper and lower sides is quick.
[0061] Then, with this operation form, the first stage-rotational speed of the motor M2 for the upper and lower sides is detected, and control which changes the ON time of the square wave outputted from 13h of square wave signal generation sections is carried out based on this rotational frequency. Drawing 10 is explanatory

drawing showing the generating timing of the pulse signal obtained at the point P6 shown in drawing 2 , in 13g of rotational-speed detecting elements shown in drawing 3 , when the motor M2 for the upper and lower sides rotates (normal rotation or inversion), counts the pulse number generated between time T1 from a rotation start, and detects rotational speed. That is, when there are many pulse numbers within fixed time (T1), it judges that rotational speed is quick, and when there are few pulse numbers within fixed time (T1), it is judged that rotational speed is slow.

[0062] And in ON time-control section 13i, when it is judged that rotational speed is [13g of the above-mentioned rotational-speed detecting elements] quick, as shown in drawing 6 (c), the ON time of a square wave is set as t1. Moreover, when it is judged that rotational speed is slow, as shown in drawing 8 (c), the ON time of a square wave is set as t2 (t2> t1). Even when the rotational speed of the motor M2 for the upper and lower sides is changed by the height of an OAT by carrying out like this, the pulse number of a RF signal can be counted with a sufficient precision.

[0063] Moreover, above, although the rotational speed of the motor M2 for the upper and lower sides was detected based on the pulse number at the time of initial rotation of rotation of the motor M2 for the upper and lower sides (namely, time T1 to be shown in drawing 10) in 13g of rotational-speed detecting elements Since a rotational frequency is not stabilized in many cases at the time of a rotation start, you may make it detect the rotational speed of the motor M2 for the upper and lower sides based on the pulse number generated between the predetermined times T3 (refer to drawing 10) after fixed time T2 pass since a rotation start.

[0064] Moreover, 13d of power control sections shown in drawing 3 sets the regulated-power-supply circuit 10 for motors to OFF, when the ignition switch SW1 is set to ON, the regulated-power-supply circuit 10 for motors is set to ON and the ignition switch SW1 is set to OFF. Moreover, after it reverses the motor M2 for the upper and lower sides and a mirror arrives at a regular position when the ignition switch SW1 is made off, and a mirror is in a setting position, it controls to turn off the regulated-power-supply circuit 10 for motors. Therefore, the power consumption of a battery 3 can be reduced.

[0065] Thus, it is made to move a mirror to a setting position or a regular position with this operation form by detecting the RF signal generated with rotation of the motor M2 for the upper and lower sides, counting this pulse number, and rotated normally or reversing the motor M2 for the upper and lower sides until it reaches the criteria counted value which this counted value set up beforehand. Furthermore, in case this excess counted value is added to criteria counted value, and the excess counted value similarly counted in the time of an inversion exceeding criteria counted value by inertia is memorized, in case the excess counted value counted exceeding criteria counted value by inertia in the time of normal rotation of the motor M2 for the upper and lower sides is memorized and it is made to reverse next time, and it is made to rotate normally next time, this excess counted value is added to criteria counted value.

[0066] therefore -- even if it is the case where the rotations by inertia differ in the time of normal rotation and an inversion -- this gap -- an amendment -- even when operation of things being made, making it a reverse gear interlocked with, and making a mirror angle tilting to a setting position is repeated two or more times, a mirror angle does not shift gradually and a mirror angle can be held at an always suitable angle

[0067] Moreover, since it has the regulated-power-supply circuit 10 for motors, it is not influenced [this] when the output voltage of a battery 3 is changed. Furthermore, since it has 13g of rotational-speed detecting elements, and ON time-control section 13i, when the rotational speed of the motor M2 for the upper and lower sides changes with ambient temperature, the ON time of the square wave signal which follows change of this rotational speed and is outputted from 13h of square wave signal generation sections can be changed, and the pulse number of a RF signal can always be counted with high precision.

[0068] Moreover, when starting operation next time, the mirror serves as a regular position, and since the motor M2 for the upper and lower sides is reversed and a mirror is returned to a regular position when a mirror is in a setting position, and ignition is turned off, fault is not generated in case operation is started again.

[0069] Furthermore, since criteria counted value arbitrary at criteria counted value setting section 13a can be set up, a setting position can be decided so that it may become the optimal for an operator.

[0070] Moreover, if the gang control means 5 shown in drawing 2 is attached to the existing mirror for vehicles which is not being interlocked with a reverse gear, since the angle control unit of this operation form can be constituted, it can be made easy with after and is rich in versatility. Furthermore, since neither the special mechanism for making it tilt to a setting position nor the position detection means for detecting a mirror angle is used, composition becomes cheap simply.

[0071] In addition, although the above-mentioned operation form explained the motor M2 for the upper and lower sides to the example as a motor for tilting which makes an example the reverse signal acquired when a shift lever is put into a reverse gear as an external signal, and is interlocked with an external signal, and operates It is possible for this invention not to be limited to this and for you to also make it other external signals interlocked with, and it is also possible to use as the motor M1 for right and left the motor for tilting which is interlocked with an external signal and operates. For example, it is also possible for this to be interlocked with, and to

constitute, using a blinker signal as an external signal, so that the motor M1 for right and left may be made to tilt.

[0072]

[Effect of the Invention] As explained above, in the angle control unit of the mirror for vehicles of this invention Since the gap by rotation of inertia is amended by adding the part which rotated across the setting position and the regular position by inertia next time at the time of rotation in case the motor for tilting is rotated and a mirror angle is moved to a setting position or a regular position When the rotation operation interlocked with the external signal is repeated two or more times, a gap does not occur at a mirror angle and it can consider as an always suitable angle.

[0073] Moreover, since it operates so that a mirror angle may be returned to a regular position when a mirror angle is in a setting position (for example, position which projects near the rear wheel section of vehicles) and ignition is made off, in case operation is again started by setting ignition to ON, fault does not occur.

[0074] Furthermore, since the regulated-power-supply circuit for motors was provided, even when an external signal is interlocked with, a mirror is made to tilt, the voltage value supplied to the motor for tilting can be held to abbreviation regularity and supply voltage (battery voltage) is changed, generating of a count error can be prevented. Moreover, since this regulated-power-supply circuit for motors is set to ON when ignition is set to ON, it can reduce power consumption.

[0075] Furthermore, even when controlling the ON time of the square wave which detects the rotational speed at the time of the motor rotation start for tilting with a speed-detection means, and is generated with a square wave generation means according to this rotational speed and the rotational speed of the motor for tilting changes, it can double with this and becomes countable [a highly precise pulse number].

[Translation done.]

TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to the angle control unit of the mirror for vehicles which controls the degree of tilt angle of mirrors for vehicles, such as a door mirror and a side-view mirror, by remote control operation.
[0002]

[Translation done.]

PRIOR ART

[Description of the Prior Art] Generally, in order that vehicles, such as a passenger car, a wagon vehicle, and a truck, may check back safety, reflector glasses, such as a door mirror and a side-view mirror, are carried. At such a reflector glass, the actuator for angle regulation by remote control is provided, and an operator can set a mirror-plane angle as a suitable position by carrying out remote control operation by the driver's seat so that a mirror-plane angle can be set as the position suitable for the operator.

[0003] Moreover, in case [, such as the time of vehicle warehousing] vehicles are retreated, as for an operator, it is desirable to put near the rear wheel section of vehicles into a field of view. However, in the above-mentioned actuator for angle regulation, since it is necessary to operate it similarly when an operator needs to push and operate the button for mirror angle adjustment each time and it returns to the original angle in order to make a mirror-plane angle incline downward and to put near the rear wheel into the visual field range, there is a fault that convenience is bad.

[0004] Then, conventionally, it detects having put the shift lever of vehicles into the reverse gear, and the mirror equipment constituted so that a mirror angle might be automatically changed to a desired tilting position is proposed, and practical use is presented as indicated by for example, JP,4-95846,U CD-ROM (henceforth the conventional example 1).

[0005] In this conventional example 1, when having put the automatic formula shift lever into the reverse gear was detected, make down carry out the specified quantity inclination of the degree of tilt angle of a reflector glass automatically, it is made to go into a visual field near the rear wheel section of vehicles by this detecting signal and a reverse gear is canceled, the contents which can be returned to the original angle are indicated. Furthermore, when the reverse gear of a shift lever is passed and the injection to a reverse gear is detected in instant (for example, when switching to a drive from parking), the delay timer circuit is provided so that a mirror angle may not tilt downward in response to this. And according to such composition, since a mirror angle tilts automatically, at the time of vehicles retreat, an operator does not have troublesome operation, and there is an advantage that operability improves in it.

[0006] However, with such composition, if tilting operation of the mirror interlocked with the reverse gear is repeated two or more times, the problem that a mirror position shifts gradually will occur. Hereafter, this is explained in detail. In addition, the case where the case where it is in a "regular position" and the position where a mirror projects near the rear wheel of vehicles about the case where a mirror is in the usual back check-by-looking position below is called "setting position", and the motor for tilting is rotated from a regular position to a setting position will be called "normal rotation", and this contrary will be called "inversion."

[0007] If put into a shift lever by the reverse gear, in response to this signal, it will rotate normally and a mirror will move to a setting position from a regular position. At this time, in fact, a mirror does not necessarily stop correctly in a setting position, and after stopping voltage supply on the motor for tilting, this motor for tilting rotates a little by inertia, and a mirror is tilted a little. On the other hand, a reverse gear reverses release **** and a mirror from a setting position to a regular position in this position. Under the present circumstances, after a mirror's necessarily not stopping correctly in a regular position and stopping supply of the voltage to the motor for tilting like the time of normal rotation, this motor for tilting rotates a little by inertia, and a mirror is tilted a little.

[0008] And since the rotation by inertia is different in many cases in the time of normal rotation and an inversion, if normal rotation and an inversion are repeated two or more times, the error by difference of the rotation by inertia will be accumulated, and the problem that the degree of tilt angle of a mirror will shift gradually will generate it.

[0009] In another side, in case it is alike vehicles on stream and invades into a highway, to make large the visual field range of the right-hand side side for a safety check is desired. However, it is not easy to adjust the above-mentioned actuator for angle regulation, and to change the visual field range of a mirror plane at the time of highway invasion, conventionally, a signal when the switch of a blinker is set to ON is detected, and the thing which makes the mirror-plane angle of a reflector glass incline in a longitudinal direction automatically is known as indicated by for example, the JP,58-29540,U microfilm (henceforth the conventional example 2). However, like

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, it is with the angle control unit of the mirror for vehicles of this invention. Since the gap by rotation of inertia is amended by adding the part which rotated across the setting position and the regular position by inertia next time at the time of rotation in case the motor for tilting is rotated and a mirror angle is moved to a setting position or a regular position When the rotation operation interlocked with the external signal is repeated two or more times, a gap does not occur at a mirror angle and it can consider as an always suitable angle.

[0073] Moreover, since it operates so that a mirror angle may be returned to a regular position when a mirror angle is in a setting position (for example, position which projects near the rear wheel section of vehicles) and ignition is made off, in case operation is again started by setting ignition to ON, fault does not occur.

[0074] Furthermore, since the regulated-power-supply circuit for motors was provided, even when an external signal is interlocked with, a mirror is made to tilt, the voltage value supplied to the motor for tilting can be held to abbreviation regularity and supply voltage (battery voltage) is changed, generating of a count error can be prevented. Moreover, since this regulated-power-supply circuit for motors is set to ON when ignition is set to ON, it can reduce power consumption.

[0075] Furthermore, even when controlling the ON time of the square wave which detects the rotational speed at the time of the motor rotation start for tilting with a speed-detection means, and is generated with a square wave generation means according to this rotational speed and the rotational speed of the motor for tilting changes, it can double with this and becomes countable [a highly precise pulse number].

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Although the thing to which a reverse gear is interlocked with and a mirror angle is made to tilt downward (back wheel check-by-looking position), and the thing which operates so that a blinker may be interlocked with and a mirror angle may be made to tilt to a longitudinal direction are proposed in the control unit of the mirror angle in the former as described above In the control unit of such a conventional mirror angle, when operation of having made it a reverse gear or a blinker interlocked with, and making a mirror angle tilting was repeated two or more times, there was a fault that a mirror angle will shift gradually.

[0011] the case where the place which it is made in order that this invention may solve such a conventional technical problem, and is made into the purpose was interlocked with external signals, such as a reverse gear or a blinker, and a mirror angle is made to tilt -- setting -- a gap of a mirror angle -- an amendment -- it is in offering the angle control unit of the mirror for vehicles which can do things

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[Translation done.]

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention of a publication to this application claim 1 By impressing supply voltage with manual operation to the motor for tilting which consists of direct-current brush motors While rotate the motor for tilting concerned, and enabling adjustment of a mirror angle, and supply of an external signal being interlocked with, rotating the aforementioned motor for tilting normally and making a mirror tilt to a desired setting position In the angle control unit of the mirror for vehicles controlled for the supply interruption of an external signal to be interlocked with, to reverse the aforementioned motor for tilting, and to return a mirror to a regular position A means to detect the RF signal generated at the time of the brush change at the time of the aforementioned motor rotation for tilting, and to count the pulse number of this RF signal, In case the aforementioned motor for tilting is rotated normally or reversed and a mirror angle is made into a setting position or a regular position The pulse number of the RF signal corresponding to rotation of the motor for tilting of the part which crossed a setting position or a regular position concerned by inertia is detected as excess counted value. In case the motor for tilting is reversed or rotated normally next time and a mirror angle is made into a regular position or a setting position, it is the feature to have provided the amendment means for angle of rotation at the time of an inversion or normal rotation based on the excess counted value concerned.

[0013] Invention according to claim 2 moreover, by impressing supply voltage with manual operation to the motor for tilting which consists of direct-current brush motors While rotate the motor for tilting concerned, and enabling adjustment of a mirror angle, and supply of an external signal being interlocked with, rotating the aforementioned motor for tilting normally and making a mirror tilt to a desired setting position In the angl control unit of the mirror for vehicles controlled for the supply interruption of an external signal to be interlocked with, to reverse the aforementioned motor for tilting, and to return a mirror to a regular position A RF signal-detection means to detect the RF signal generated at the time of the brush change at the time of the aforementioned motor rotation for tilting, A pulse-number count means to count the RF signal detected with the aforementioned RF signal-detection means, A criteria counted value setting means to set up the counted value of the pulse number of the aforementioned RF signal at the time of rotating normally or reversing the aforementioned motor for tilting, and moving a mirror angle to a setting position or a regular position as criteria counted value, In case the aforementioned motor for tilting is rotated normally or reversed and a mirror angle is made into a setting position or a regular position An excess counted value storage means to memorize the pulse number of the RF signal corresponding to rotation of the motor for tilting of the part which crossed a setting position or a regular position concerned by inertia as excess counted value, In case the motor for tilting is reversed or rotated normally next time and a mirror angle is made into a regular position or a setting position The drive control means which output a drive control signal that the aforementioned motor for tilting should be normally reversed or rotated so that the pulse number of the RF signal generated at the time of an inversion or normal rotation may turn into a pulse number which added the aforementioned excess counted value to the aforementioned criteria counted value, It is characterized by having been based on the aforementioned drive control signal and providing a motorised means to rotate normally or reverse the aforementioned motor for tilting.

[0014] Invention according to claim 3 is interlocked with the ignition of the vehicles concerned, and it turns on, has the ignition switch which carries out OFF operation, and carries out that the aforementioned drive control means output a control signal that the aforementioned motor for tilting should be reversed and a mirror angle should be moved to a regular position when the aforementioned mirror angle is to a setting position and it comes in the aforementioned ignition switch to be turned off as the feature.

[0015] Invention according to claim 4 is characterized by providing the regulated-power-supply circuit for motors which stabilizes the voltage signal supplied to the aforementioned motorised means. Invention according to claim 5 sets the aforementioned regulated-power-supply circuit for motors to ON, when the aforementioned ignition switch is ON, and when the aforementioned ignition switch is OFF, it is characterized by providing the power control means which makes off the aforementioned regulated-power-supply circuit for motors.

[0016] Invention according to claim 6 shapes in waveform the RF signal detected with the aforementioned RF

signal-detection means. A waveform-shaping means to generate the square wave of the bundle ball corresponding to one brush change is provided. It has a square wave generation means to generate the square wave which serves as fixed time ON synchronizing with the timing of generating of the square wave of the aforementioned bundle ball. and the aforementioned pulse-number count means It is characterized by counting the pulse number of the output signal of the aforementioned waveform-shaping means, the output signal of the aforementioned square wave generation means, and the pulse signal obtained based on the logical operation of **.

[0017] It carries out that invention according to claim 7 possessed an ON time-control means control the ON time of the square wave generated with the aforementioned square wave generation means according to the rotational speed which has a speed-detection means detect the rotational speed of the aforementioned motor for tilting based on the generating timing of the RF signal generated within fixed time from the rotation start of the aforementioned motor for tilting, and was detected with this speed-detection means as the feature.

[0018] It is characterized by the aforementioned ON time-control means detecting the rotational speed of the aforementioned motor for tilting based on the rotational speed detected with the aforementioned speed-detection means within fixed time after carrying out predetermined-time progress from the rotation start of a motor in invention according to claim 8.

[0019] In case according to this invention constituted like **** the motor for tilting is rotated normally and a mirror angle is moved to a setting position, the counted value of the pulse number of the RF signal corresponding to the part which rotated across this setting position by inertia is memorized as excess counted value. And in case the motor for tilting is reversed next time and a mirror is returned to a regular position, the motor for tilting is reversed so that it may become the counted value which added excess counted valu to the criteria counted value set up beforehand.

[0020] And in case the counted value of the pulse number of the RF signal corresponding to the part which rotated across this regular position by inertia when reversing the motor for tilting and returning to a regular position similarly is memorized as excess counted value, the motor for tilting is rotated normally next time and a mirror angle is made into a setting position, this excess counted value is added to criteria counted value, and the motor for tilting is rotated normally.

[0021] Since the gap of a mirror angle was amended each time, even when the mirror angle control interlocked with the external signal is repeated two or more times according to such operation, a mirror angle does not shift and it can consider as an always suitable angle.

[0022]

[Embodiments of the Invention] Hereafter, the operation form of this invention is explained based on a drawing. The block diagram showing the composition of the mirror angle control unit 1 and reflector glass 2 which drawing 1 requires for 1 operation form of this invention, and drawing 2 are the circuit diagrams showing the concrete composition. As shown in this drawing, this mirror angle control unit 1 controls by manual operation in reversible rotation of the motor M1 for right and left carried in a reflector glass 2 and the motor M2 for the upper and lower sides, and adjusts it to the angle of a request of the degree of tilt angle of a reflector glass 2.

[0023] furthermore, when the reverse signal (external signal) outputted when the shift lever of vehicles is supplied to a reverse gear (backward gear) is given Rotate the motor M2 for the vertical directions normally, and a mirror is made to tilt to a desired setting position automatically. When it enables it to check by looking near the wheel of vehicles back and a reverse signal is canceled, the motor M2 for the upper and lower sides is reversed, and it operates so that a mirror may be returned to the original position (regular position). In addition, below, although a reverse signal is explained to an example as an external signal, this invention is not limited to this.

[0024] As shown in drawing 1 , this mirror angle control unit 1 The battery 3 as DC power supply, and the mirror switch 4 for making it rotate so that the voltage from a battery 3 may be supplied to the motor M1 for right and left, and the motor M2 for the upper and lower sides with manual operation and a mirror may serve as a desired angle, Usually, while sometimes carrying out the rotation drive of the motor M1 for right and left, and the motor M2 for the upper and lower sides by operation by the mirror switch 4, when the reverse signal S1 is given, it has a gang control means 5 to be interlocked with the reverse signal S1 concerned, and to control rotation of the motor M2 for the upper and lower sides. The motor M1 for right and left and the motor M2 for the upper and lower sides consist of direct-current brush motors, respectively.

[0025] The gang control means 5 is the change section 6 which switches a manual operation and interlocking operation, and a detecting element which detects the RF signal generated at the time of the brush change at the time of the motor M2 rotation for the upper and lower sides.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the angle control unit of the mirror for vehicles concerning 1 operation gestalt of this invention, and the composition of a reflector glass.
[Drawing 2] It is explanatory drawing showing the concrete circuitry of the angle control unit of the mirror for vehicles shown in drawing 1 , and a reflector glass.
[Drawing 3] It is the functional block diagram showing the internal configuration of the main-control section.
[Drawing 4] It is explanatory drawing showing the composition of a direct-current brush motor.
[Drawing 5] It is the flow chart which shows operation of the angle control unit of the mirror for vehicles concerning 1 operation gestalt of this invention.
[Drawing 6] It is a wave form chart in each point of a waveform shaping circuit, and in a point P3 and (b), a point P4 and (c) show point P5, and (d) shows [(a)] the signal wave form of a point P6, respectively.
[Drawing 7] It is a wave form chart in each point of a waveform shaping circuit when the rotational speed of a motor becomes slow, and in a point P3 and (b), a point P4 and (c) show point P5, and (d) shows [(a)] the signal wave form of a point P6, respectively.
[Drawing 8] It is a wave form chart in each point of a waveform shaping circuit when the rotational spe d of a motor becoming slow and lengthening ON time of the square wave in point P5, and in a point P3 and (b), a point P4 and (c) show point P5, and (d) shows [(a)] the signal wave form of a point P6, respectively.
[Drawing 9] It is a wave form chart in each point of a waveform shaping circuit when the rotational speed of a motor becoming quick and lengthening ON time of the square wave in point P5, and in a point P3 and (b), a point P4 and (c) show point P5, and (d) shows [(a)] the signal wave form of a point P6, respectively.
[Drawing 10] It is explanatory drawing showing the pulse number generated at the point P6 at the time of the rotation start of the motor for the upper and lower sides.
[Drawing 11] It is explanatory drawing showing typically the relation between a mirror angle and the rotational frequency of the motor for the upper and lower sides.
[Description of Notations]
1 Mirror Angle Control Unit
2 Reflector Glass
3 Battery
4 Mirror Switch
5 Gang Control Means
6 Change Section
7 Detecting Element (RF Signal-Detection Means)
8 Motorised Circuit (Motorised Means)
9 Control Circuit
10 Regulated-Power-Supply Circuit for Motors
11 Regulated-Power-Supply Circuit for Circuits
12 Transistor Control Section
13 Main-Control Section
13a Criteria counted value setting section (criteria counted value setting means)
13b Pulse-number count area (pulse-number count means)
13c Excess counted value storage section (excess counted value storage means)
13d Power control section (power control means)
13e Relay-control section
13f Motorised control section (drive control means)
13g Rotational-speed detecting element (speed-detection means)
13h Square wave generation section (square wave generation means)
13i ON time-control section (ON time-control means)
14 Waveform-Shaping Section (Waveform-Shaping Means)

21 Direct-Current Brush Motor
21a Brush
M1 Motor for right and left
M2 Motor for the upper and lower sides (motor for tilting)
SW1 Ignition switch
Q1-Q4 Transistor
Q5 Transistor for a relay
L1, L2 Pick up coil
C3, C4 Capacitor for an alternating current path
NA1, NA2 NAND circuit
NOT1-NOT4 Inverter circuit
RC Relay coil
RY1-RY3 Relay contact
S1 Reverse signal
S2 Ignition detection signal

[Translation done:]

*NOTICES *

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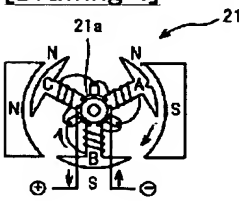
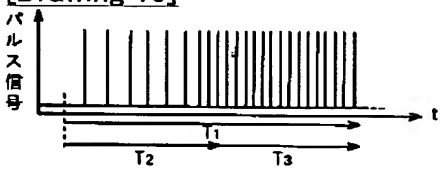
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

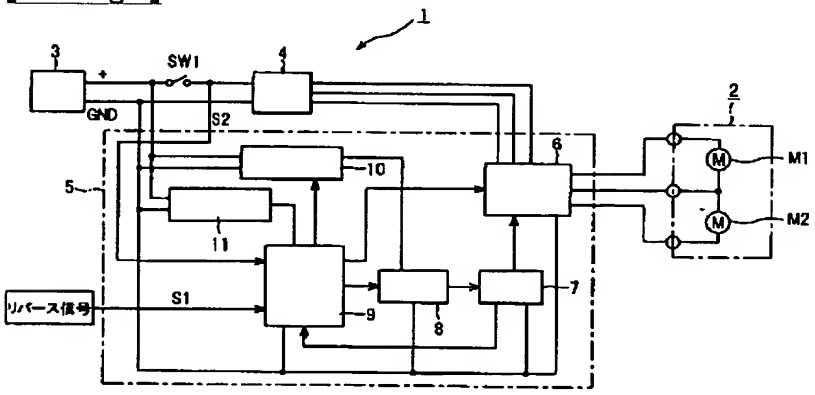
[Drawing 4]



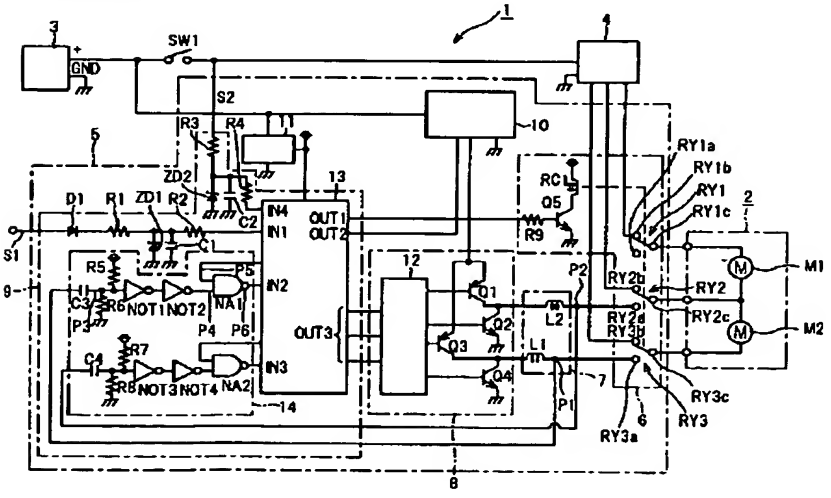
[Drawing 10]



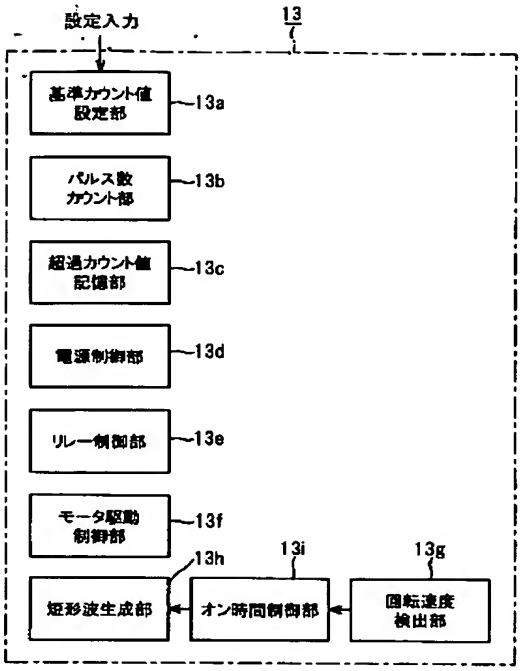
[Drawing 1]



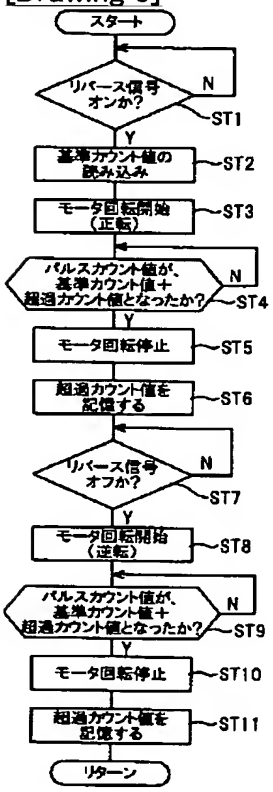
[Drawing 2]



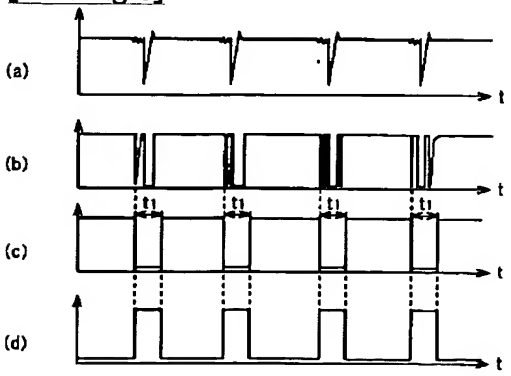
[Drawing 3]



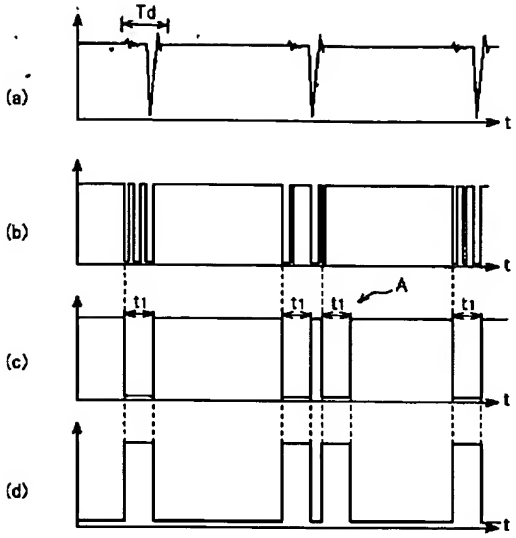
[Drawing 5]



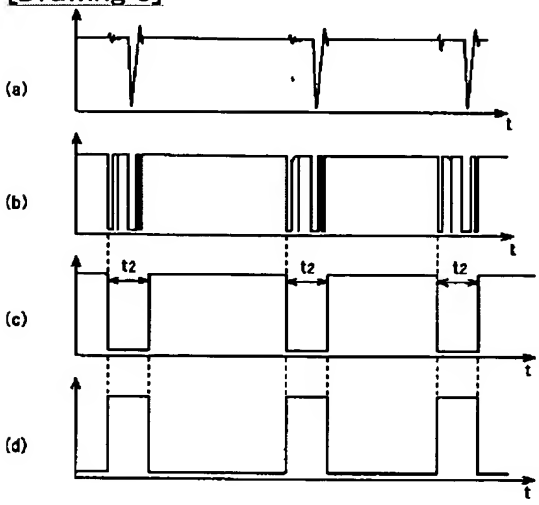
[Drawing 6]



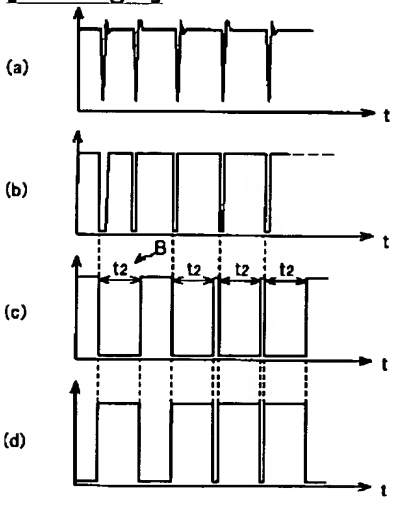
[Drawing 7]



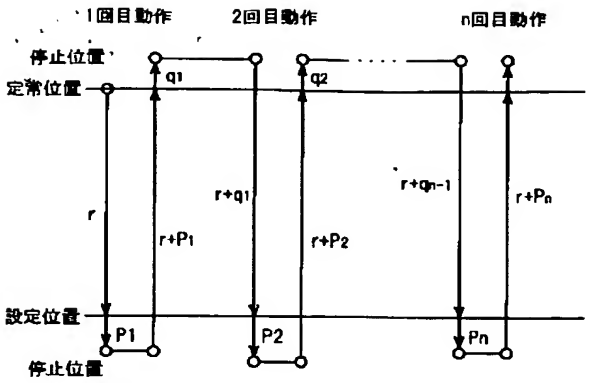
[Drawing 8]



[Drawing 9]



[Drawing 11]



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(57)【要約】
【課題】リバースギヤと連動してミラー角度を傾動させた場合に、ミラー角度のずれの発生を防止することのできる車両用ミラーの角度制御装置を提供することが課題である。
【解決手段】上下用モータM2を正転させてミラー角度を設定位置に移動させる際に、惰性により該設定位置を越えて回転した分に対応する高周波信号のパルス数のカウント値を超過カウント値として超過カウント値記憶部13cに記憶する。そして、次回上下用モータM2を逆転させてミラーを定常位置へ戻す際には、予め設定した基準カウント値に超過カウント値を加算したカウント値となるように、上下用モータM2を逆転させる。このような操作により、ミラー角度のずれが補正されるので、リバース信号と連動したミラー角度制御を複数回繰り返した場合でも、ミラー角度がずれることがなく、常に好適な角度とすることができる。

【特許請求の範囲】
【請求項1】直流ブラシモータで構成される傾動用モータに対し、手動操作で電源電圧を印加することにより、当該傾動用モータを回転させてミラー角度を調整可能とし、且つ、外部信号の供給に連動して前記傾動用モータを正転させてミラーを所望の設定位置に傾動させると共に、外部信号の供給停止に連動して前記傾動用モータを逆転させてミラーを定常位置に復帰させるように制御する車両用ミラーの角度制御装置において、前記傾動用モータ回転時の、ブラシ切換時に発生する高周波信号を検出し、該高周波信号のパルス数をカウントする手段と、前記傾動用モータを正転または逆転させてミラー角度を設定位置または定常位置とする際に、惰性により当該設定位置または定常位置を越えた分の傾動用モータの回転に対応する高周波信号のパルス数を超過カウント値として検出し、次回傾動用モータを逆転または正転させてミラー角度を定常位置または設定位置とする際に、当該超過カウント値に基づいて逆転時または正転時の回転角度を補正する手段と、を具備したことを特徴とする車両用ミラーの角度制御装置。
【請求項2】直流ブラシモータで構成される傾動用モータに対し、手動操作で電源電圧を印加することにより、当該傾動用モータを回転させてミラー角度を調整可能とし、且つ、外部信号の供給に連動して前記傾動用モータを正転させてミラーを所望の設定位置に傾動させると共に、外部信号の供給停止に連動して前記傾動用モータを逆転させてミラーを定常位置に復帰させるように制御する車両用ミラーの角度制御装置において、前記傾動用モータ回転時の、ブラシ切換時に発生する高周波信号を検出する高周波信号検出手段と、前記高周波信号検出手段で検出された高周波信号をカウントするパルス数カウント手段と、前記傾動用モータを正転または逆転させてミラー角度を設定位置または定常位置に移動する際の、前記高周波信号のパルス数のカウント値を基準カウント値として設定する基準カウント値設定手段と、前記傾動用モータを正転または逆転させてミラー角度を設定位置または定常位置とする際に、惰性により当該設定位置または定常位置を越えた分の傾動用モータの回転に対応する高周波信号のパルス数を超過カウント値として記憶する超過カウント値記憶手段と、次回傾動用モータを逆転または正転させてミラー角度を定常位置または設定位置とする際に、逆転時または正転時に発生する高周波信号のパルス数が、前記基準カウント値に前記超過カウント値を加算したパルス数となるように前記傾動用モータを逆転または正転させるべく駆動制御信号を出力する駆動制御手段と、前記駆動制御信号に基づいて、前記傾動用モータを正転または逆転させるモータ駆動手段と、を具備したことを特徴とする車両用ミラーの角度制御装置。
【請求項3】当該車両のイグニッションと連動してオン、オフ動作するイグニッションスイッチを有し、前記駆動制御手段は、前記ミラー角度が設定位置にあるときに前記イグニッションスイッチがオフとなったときには、前記傾動用モータを逆転させてミラー角度を定常位置に移動させるべく制御信号を出力することを特徴とする請求項2に記載の車両用ミラーの角度制御装置。
【請求項4】前記モータ駆動手段に供給する電圧信号を安定化させるモータ用安定化電源回路を具備したことを特徴とする請求項2または請求項3のいずれかに記載の車両用ミラーの角度制御装置。
【請求項5】前記イグニッションスイッチがオンのときには、前記モータ用安定化電源回路をオンとし、前記イグニッションスイッチがオフのときには、前記モータ用安定化電源回路をオフとする電源制御手段を具備したことを特徴とする請求項4に記載の車両用ミラーの角度制御装置。
【請求項6】前記高周波信号検出手段で検出された高周波信号を波形整形して、1回のブラシ切換に対応する一纏まりの矩形波を生成する波形整形手段を具備し、且つ、前記一纏まりの矩形波の発生のタイミングに同期して一定時間オンとなる矩形波を生成する矩形波生成手段を有し、前記パルス数カウント手段は、前記波形整形手段の出力信号と、前記矩形波生成手段の出力信号と、の論理演算に基づいて得られるパルス信号のパルス数をカウントすることを特徴とする請求項2～請求項5のいずれか1項に記載の車両用ミラーの角度制御装置。
【請求項7】前記傾動用モータの回転開始から一定時間内に発生する高周波信号の発生タイミングに基づいて前記傾動用モータの回転速度を検出する速度検出手段を有し、且つ、該速度検出手段にて検出された回転速度に応じて前記矩形波生成手段にて生成される矩形波のオン時間を制御するオン時間制御手段を具備したことを特徴とする請求項6に記載の車両用ミラーの角度制御装置。
【請求項8】前記オン時間制御手段は、モータの回転開始から所定時間経過した後の一定時間内に、前記速度検出手段にて検出された回転速度に基づいて前記傾動用モータの回転速度を検出することを特徴とする請求項7に記載の車両用ミラーの角度制御装置。